

REMARKS

Applicant has amended claims 6 and 7, and has added new claim 8. Support for the claim amendments can be found in the as-filed specification, e.g., paragraphs [0021], [0024], [0025], [0038], and [0039]; and Tables 1 and 2. No new matter has been introduced. Claims 3-8 are currently pending with claims 4 and 5 being withdrawn as being non-elected.

Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 3, 6, and 7 under 35 U.S.C. §103(a) based on U.S. Patent No. 5,731,075 to Goto et al. ("Goto") for at least the following reasons.

Amended claim 6 recites, "[a] resin substrate, comprising: a resin-metal composite layer defining a top surface of the resin substrate, the resin-metal composite layer comprising reduced metallic particles dispersed in a resin matrix and adsorbed to polar groups in the resin matrix."

The as-filed specification supports the above-quoted features recited in amended claim 6. For example, the specification discloses a resin-metal composite layer formed by modifying a surface of a resin substrate to a modified layer having a polar group, contacting the modified layer with a metal compound solution, and adsorbing at least either metal colloids or ions to the polar group, so that metal particles are dispersed into the modified layer. See paragraphs [0025], [0038], and [0039]. As a result, a resin-metal composite layer defines a top surface of the resin substrate, in which reduced metal particles are dispersed and adsorbed to the polar groups of a resin matrix. Accordingly, the metal particles are dispersed in the resin-metal composite layer defining a top surface of a resin substrate, as claimed, instead of the entire resin substrate.

Goto neither discloses nor suggests amended claim 6. In Goto, a polymer compound is mixed with a solvent to produce a polymer compound having metal particles, further mixed with other reagents in a liquid form, and is applied and dried to print on a glass substrate. See Goto, col. 4, lines 50-52; col. 6, lines 3-16. This teaching of Goto indicates that the metal particles are dispersed in the entire colorant layer from a top surface to a bottom surface that contacts the glass substrate, which differs from claim 6, in particular, the feature “a resin-metal composite layer defining a top surface of [a] resin substrate.” Absent modifying a top surface of its colorant layer to form a resin-substrate composite layer, Goto also neither discloses nor suggests “[a] resin-metal composite layer comprising reduced metallic particles dispersed in a resin matrix and adsorbed to polar groups in the resin matrix,” as recited in claim 6.

Goto also neither discloses or suggests “[a] resin-metal composite layer [that] is from 20 to 200 nm in thickness; and [a] concentration of . . . metallic particles [that] is from 20 to 90%(v/v) in the resin-metal composite layer,” as recited in amended claim 6.

The Office Action at page 4 asserted that Goto allegedly teaches “changing the thickness of the polymer layer and the metal layer,” which would correspond to the thickness of an entire colorant layer. However, Goto’s asserted disclosure of adjusting the thickness of the entire colorant layer is different from adjusting the thickness of a resin-metal composite layer defining a top surface of an entire resin substrate.

Moreover, the as-filed specification discloses that the resin-metal composite layer having a thickness of 20 to 200 nm, as claimed, achieves effective transparency and electric conductivity. See page 7, lines 3-11; Tables 1 and 2 at pages 19 and 21.

Such teachings were not disclosed or suggested in Goto. Even hypothetically if Goto were modified to include a resin-metal composite layer defining a top surface of a

resin substrate, as claimed, one of ordinary skill in the art would not have recognized a thickness of the resin-metal composite layer as a result-effective variable, and would not have predicted that the claimed range of the resin-metal composite layer thickness would be critical to achieve superior properties of the resin substrate.

For at least the foregoing reasons, amended claim 6 is allowable over Goto. Claims 3 and 7 depend from claim 6 and incorporate all of the features of amended 6. Accordingly, claims 3 and 7 are allowable over Goto for at least the same reasons as those set forth for amended claim 6.

New claim 8 recites that “[a] resin-metal composite layer is from 50 to 200 nm in thickness; and the concentration of . . . metallic particles is from 60 to 80 %(v/v) in the resin-metal composite layer.” New claim 8 depends from amended claim 6, and incorporates all of the features of amended claim 6. Accordingly, claim 8 is allowable over Goto.

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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